



**STRATEGIES FOR SCIENTIFIC, RESEARCH, DEVELOPMENT,
INNOVATION, ARTISTIC
AND OTHER CREATIVE ACTIVITIES OF
THE FACULTY OF SCIENCE, HUMANITIES
AND EDUCATION OF TUL
until 2025 with a view to 2030**

Liberec, November 2022

1. Introduction

The Faculty of Science, Humanities and Education of the Technical University of Liberec (the following will be used further in the text: FED TUL, FED, Faculty) was established in 1990 as the Faculty of Education of the former University of Engineering and Textile in Liberec (VŠST). This influenced its nature and the professional profile of its various departments. In contrast to many other faculties of education, some of whose departments after 1990 first became the nuclei of and subsequently turned into newly established faculties of science, philosophy and other faculties, the FED has maintained all of its original departments united throughout its existence, developed them, and also established many new ones. Although the current name of the Faculty might seem somewhat unusual, it captures its essence well. It is embodied in the coexistence of departments typical of science- and humanities-oriented faculties; yet, the FED mainly offers study programmes with a focus on education.

In its structure, the Faculty does not correspond to other faculties of education, where the core components are departments of art education, pedagogy, psychology, special and social education, etc. However, both the Ministry of Education and other universities, including TUL, consider the Faculty to have a primary focus on education. This perspective of its role is particularly important for the Liberec region. Data acquired show that the presence of a regional faculty of education is crucial to ensure a sufficient number of qualified teaching staff at various types of schools and other educational institutions in the region. For this reason, the above-mentioned character of the Faculty must be maintained, and the Faculty further promoted in the area of its central field of creativity, including its development of teaching methodology and other disciplines of education and psychology.

TUL is the only university in the Liberec region. Although the character of the region and its historical development have predestined an emphasis on technical disciplines, it is comprehensible that natural, socially and humanities-oriented disciplines are cultivated here as well. Given that TUL is one of the smallest universities in the country and that the Faculty ranks among the smallest faculties of education in terms of the number of students, a broader focus than just pedagogical orientation makes, from the long-term perspective, sense. Therefore, this broader focus will continue to be developed and supported through the area of creative activities.

The mission of the Faculty

The mission of the Faculty within scientific, research, artistic, creative and other fields is to spread knowledge, to cultivate Czech society, and to contribute to social balance and sustainable development.

The Faculty strives for professional and innovative development, which will lead to the improvement of the teachers' work skills, activities of schools and of other educational and training institutions.

The vision of the Faculty

The vision of the Faculty is to be an independent, regionally anchored research centre and a partner for identifying and resolving societal challenges including, but not limited to the field of education.

In its scientific, research, artistic and other creative activities, it profiles itself as an independent research and innovation institution that actively seeks out grand societal challenges and research tasks in the fields developed at the Faculty, and brings their comprehensive, optimal solutions.

2. Background and structure of the activities of the FED

FED provides education in a wide range of study programmes in education, natural and social sciences and the humanities. This inherently corresponds to the Faculty's wide range of areas of creative activities, the vast majority of which are staffed by only a small number of employees, in many cases by just one.

2.1 Professional creative activity

The professional creative activity is divided into scientific areas and disciplines according to the [OECD manual](#), into the so-called fields of research and development (FORDs), in effect detailed FORDs (DFORDs). We do not translate the names of individual FORDs and DFORDs. The structuring shows minor exceptions, e.g. the subject specific didactics (DFORD 50301) are systematically assigned to their respective subjects.

2.1.1 Natural sciences (FORD 1) including applications (FORD 2)

Incidence of FORDs with specific departments:

	FORD 101	FORD 102	FORD 103	FORD 104	FORD 105	FORD 106
KMD (Department of Mathematics and the Methodology of Teaching Mathematics)	X					
KAP (Department of Applied Mathematics)	X	X			X	
KFY (Department of Physics)			X	X		
KCH (Department of Chemistry)				X		X
KGE (Department of Geography)					X	X

FORD 101 Mathematics

Professional activities in the field of mathematics extend to all three DFORDs 10101 (Pure mathematics), 10102 (Applied mathematics) and 10103 (Statistics and probability), with applied mathematics being the dominant area.

In the field of pure mathematics, research is focused on the theory of functions and their approximations. At the boundary between pure and applied mathematics, it focuses on the approximation of functions by wavelets, numerical solutions of integro-differential equations, and on numerical linear algebra. In these aforementioned fields, outcomes of research achieved have been of wider international significance. Results in the other subfields of applied mathematics are less significant: genetic algorithms, robot control, and so on; these have been achieved in cooperation with the other faculties of TUL.

Within the area of statistics and probability theory, particular attention is devoted to non-parametric and

robust methods of estimation and hypothesis testing, and results of wider international significance have been repeatedly achieved.

Within the field of math education, i.e. DFORD 50301 (Education, general; including training, pedagogy, didactics), we focus on the methodology of teaching geometry, such as the development of spatial imagination by, for example, the means of 3D printing, and the didactics of mathematics, such as the development of students' logical thinking skills and of problem-solving methods. In this field, the results achieved (in some cases, through European cooperation) are easily comparable to similar efforts at national level.

DFORD 102 Computer sciences, information science

The scope of professional activities in the field of informatics, DFORD 10201 (Computer sciences, information science) is limited (this is because within TUL, professional informatics is based mainly at the Faculty Mechatronics and at the Department of Computer Science of the Faculty of Economics) to the following areas: the creation of software tools for medical research and practice and applications of geographic information systems (see [DFORD 105](#)).

The teaching of Informatics, DFORD 50301 (Education, general; including training, pedagogy, didactics), focuses mainly on the preparation of materials for teaching informatics at primary schools, especially in relation to the current reforms of the National Curriculum Framework.

DFORD 103 Physical sciences

Research within physics fits into two DFORDs: 10302 (Condensed matter physics (including formerly solid-state physics, superconductors) and 10306 (Optics (including laser optics and quantum optics)).

The research focuses on the application of optical methods in the search for dark matter and energy, and on the study of the physical nature of non-classical optical beams and their applications. This is basic research in the field of optics; specifically, it is the measurement of very weak signals (high-precision ellipsometry for the measurement of the induced double-break in vacuum), which is carried out in collaboration with major international scientific organisations (e.g. OSQAR/CERN project, QED/VMB&CERN experiment). We also develop optical and electrical measurement methods for the description of nanoparticles and of their behaviour in different environments, and for ferroelectric and piezoelectric ceramics, respectively.

Concerning education, DFORD 50301 (Education, general; including training, pedagogy, didactics), attention is paid to the methodology of teaching physics, to school and demonstration physics experiments, the popularization of physics, and problem-solving methods. We also focus on developing work literacy. In the field of education, the achieved results are comparable with similar efforts on the national level.

DFORD 104 Chemical sciences (and 205 Materials engineering and 210 Nano-technology)

In the field of chemical sciences (considering the generally accepted meaning of the word), the research extends to DFORD 10405 (Electrochemistry: dry cells, batteries, fuel cells, corrosion metals, electrolysis). By extension, through cooperation with other units of TUL, esp. the Institute for Nanomaterials, Advanced Technologies and Innovation, the research and development of materials, in particular nanomaterials and their applications, is also carried out in DFORDs 20506 (Coating and films), 21001 (Nano-materials, production and properties) and others (see also [Medical Sciences and Health Science DFORD 304](#)). The cross-cutting and dominant area is that of nanotechnology.

Research in electrochemistry deals with the development of carbon nanofiber structures containing catalytic nanoparticles for use in fuel cells, batteries, supercapacitors and sensors. Specifically, it is mainly applied research on the physical nature of electrical alternating wetting, which will be applied in investigation within the preparation of carbon nanostructures. Strong international collaboration within this area has been established, including representatives from six major European research institutes.

In terms of application overlap, the development of new types of hybrid materials and nanomaterials in the form of nanoparticles, nanolayers and nanofibers with applications in the field of catalysis, filtration and medicine is underway. The produced materials are mainly prepared from organo-mono-silylated or organo-bis-silylated precursors depending on the type and target of their potential application, while the current trends in environmental protection and economic aspects are taken into consideration. The development is directly linked to the Nanotechnology study programme.

Within the area of education, DFORD 50301 (Education, general; including training, pedagogy, didactics), attention is given to the use of information technology to support practical and inquiry-based learning, environmental education, and training.

FORD 105 Earth and related environmental sciences (except palaeontology)

Within the earth sciences, the Faculty focuses primarily on research in DFORD 10501 (Hydrology), 10508 (Physical geography), and 10505 (Geology). There is also significant research in 10506 (Paleontology), which, for practical reasons, is listed in a separate section.

The main focus of this area is on current topics of applied geography related to natural hazards and the physical-geographical aspects of the risks these incur on different levels: local (adaptation strategies to climate change in Liberec and the Liberec Region); national (impact and measures in the most vulnerable areas of the Czech Republic, such as research on hydrological processes and possible interventions in the landscape (retention) to mitigate the impact of floods or droughts); international (adaptation strategies for Central Europe); and global (research on the impact of climate change on the natural environment and population in the Peruvian and Ecuadorian Andes or in the Kyrgyzstan's Tien Shan).

In addition, the development of applications of geographic information systems (GIS) is carried out at the interface between geography and computer science (see also [FORD 102](#)). The overlap with human geography is also significant (see [Social Sciences FORD 507](#)).

Within the methodology of teaching the subject, DFORD 50301 (Education, general; including training, pedagogy, didactics), attention is paid mainly to the specifics of the field teaching of geography and cross-subject relations with geography.

FORD 106 Biological sciences (including palaeontology)

Important research is being conducted in DFORD areas 10506 (Paleontology) and 10613 (Zoology), such as the study of bryophytes (both fossil and recent) and their importance to the ecosystems. This research is at a world-class standard.

2.1.2 Medical Sciences and Health Sciences (FORD 3) including Technology (FORD 2)

Incidence of FORDs with departments:

	FORD 303	FORD 304
KTV (Department of PE)	X	
KCH (Department of Chemistry)		X

The creative professional activities of the Faculty also extend into the medical sciences and health sciences. This concerns mainly research on physical activities (in connection with study programmes related to physical education), specifically DFORDs 30304 (Public and environmental health) and 30306 (Sport and fitness sciences), and on applications of nanomaterials in health care, i.e. DFORD 30404 (Biomaterials, as related to medical implants, devices, sensors).

FORD 303 Health sciences

Within the health sciences, the main focus is on monitoring physical behaviour (physical activity, sedentary behaviour, and sleep) and fitness testing of the general population, especially children and adolescents, in the context of primary and secondary health prevention. Publication outputs in this area reach national (e.g. contribution to the National Report on Physical Activity of Czech Children and Youth) and international levels (contributions to prestigious international scientific journals with high impact factor, including Q1 and Q2 level according to AIS). This research is directly linked to programmes related to physical education and a healthy lifestyle (this also relates to [Social Sciences FORD 501](#)).

FORD 304 Medical biotechnology (and 210 Nano-technology)

The research and development of biomaterials for medical applications (tissue carriers, wound covers, surgical and oral sutures, drug delivery systems) is an active field of action. Materials containing active substances are also being developed to support specific treatments or to support cell culture growth within the process of regeneration. In the area of bioassays, research activities are mainly focused on the interaction of cell populations with artificial scaffolds, in-vitro assays for cytotoxicity, viability, hemocompatibility, and biodegradability. This is linked to the Bioengineering and Nanotechnology degree programs (see also [Natural Sciences FORD 104](#)).

2.1.3 Social sciences (except didactics) (FORD 5)

Incidence of FORDs with departments:

	FORD 501	FORD 503	FORD 504	FORD 507
KGE (Department of Geography)				X
KFL (Department of Philosophy)			X	
KSS (Department of Social Work and Special Education)		X	X	
KPV (Department of Primary Education)		X		
KPP (Department of Education and Psychology)	X	X		
KTV (Department of PE)	X			
all departments		Subject-focused teaching methodology		

FORD 501 Psychology and cognitive sciences

Research in psychology can be classified under DFORD 50101 (Psychology: including human-machine relations) and 50102 (Psychology, special education, including therapy for learning difficulties, speech, visual, and other physical or mental impairment).

Creative activity in the field of psychology focuses on the issues of the socialization of youth and its disorders, the psychology of learning, social communication, and psycho-social issues of personal growth. Relevant results have been achieved at national level in this field.

Our research in this area also focuses on human psychomotor development and uses the benefits of multidisciplinary approaches in psychomotor development diagnostics and for intervention against possible impairments (see also [Medical Sciences and Health Science FORD 303](#)). It further deals with factors that influence psychomotor development during ontogeny and are generally related to human health in the field of motor literacy.

Modern approaches in the methodology of teaching theoretical and practical subjects, and in the field of pedagogical and pedagogical-psychological diagnostics in general are also being developed and tested, including a focus on the special educational needs of specific groups of pupils, with an emphasis on pupils at risk of academic failure.

FORD 503 Education

Professional activity in the field of education extends to both DFORDs: 50301 (Education, general; including training, pedagogy, didactics) and 50302 (Education, special, to gifted persons, those with learning disabilities). Our activity in these fields includes both basic and applied research.

Research within pre-primary and primary education focuses on the issue of a holistic approach to education. In the area of language, attention is paid to reading literacy (research on the vocabulary of pupils in the first year of primary education, the development of graphomotor skills from preschool age and throughout lower comprehensive school education). In the field of art and drama education, our professional activity seeks to emphasize modern educational trends and non-traditional teaching methods.

In the field of general education, attention is paid to the processes of education and learning, to school and education reform (in the current, systemic-theoretical, and historical context), to the historical perspective of education and learning, to innovations and alternative forms of education, to the professionalization of teaching, to processes of pupil integration and inclusion, to non-formal education, to personal development, and to the issue of school culture and atmosphere. Relevant results have been achieved in these areas both at national and international levels of wider relevance.

DFORD 50301 (Education, general; including training, pedagogy, didactics) covers the development of subject-specific teaching methodology. Research in this field is carried out at practically all departments of the FED, therefore the specific focus is always dependent, for practical reasons, on the needs of the given discipline (see e.g. [Natural Sciences FORD 101](#), [FORD 102](#), etc.).

There are also professional activities that go across disciplines, and especially across subject-specific teaching methodology. One such output is the so-called Didactic Workshop - this concept is significant on a national scale, with possible specific implications also for the entire supranational regional system of education.

FORD 504 Sociology

The Faculty's professional activity within sociology fits within DFORD 50401 (Sociology), 50403 (Social topics (Women's and gender studies; Social issues; Family studies; Social work)) and 50404 (Anthropology, ethnology).

Professional activities focus mainly on issues related to the challenges of contemporary society (relations between the global and the local, the role of the media, various forms of so-called modern societies), e.g. issues of ethical decision-making in the field of research and the development of nanotechnologies (see also [Humanities FORD 603](#)).

In the field of social work, the topic of crisis management in social services is addressed. This includes, for example, an attempt to document the events and experiences that occurred in the context of the COVID-19 pandemic, which significantly affected the form and quality of social services.

FORD 507 Cultural and economic geography

Within the framework of human geography, the research carried out at the Faculty can be classified under DFORD 50702 (Urban studies (planning and development)) and 50703 (Transport planning and social aspects of transport).

The research themes are mainly cross-border cooperation, tourism, economic geography, regional development and geography of religion; all examined using analytical methods. The issues of Europe-India relations are examined extensively from the long term perspective, across several disciplines, with a particular overlap with [Humanities FORD 602](#) and [FORD 603](#). Furthermore, the Borders and Migration research group has established itself as an important agent in this area, combining cultural and socio-geographical research with historical and literary understanding of borders, see <https://migrationlibrec.tul.cz>.

In the area of education, DFORD 50301 (Education, general; including training, pedagogy, didactics), the focus is on the cross-curricular relationships between human and physical geography (see also [Natural Sciences FORD 105](#)).

2.1.4 Humanities (FORD 6)

The incidence of FORDs at departments:

	FORD 601	FORD 602	FORD 603	FORD 604
KGE (Department of Geography)			X	
KFL (Department of Philosophy)			X	
KHI (Department of History)	X			X
KCL (Department of Czech Language and Literature)		X		
KAJ (Department of English)		X		X
KNJ (Department of German)		X		X
KRO (Department of Romance Languages)		X		

FORD 601 History and Archaeology

Our creative professional activity in this field belongs only to DFORD 60101 (History). In this area, it focuses primarily on the following three interrelated thematic areas: regional history, contemporary history, and Czech-Slovak relations. Numerous outputs have met with a favourable response from the professional community at both national and international levels.

Within the development of education, DFORD 50301 (Education, general; including training, pedagogy, didactics), attention is given to improving the long-standing dysfunctional communication between university departments, academic institutions, civic and non-governmental organizations focusing on teaching reform, schools and practising teachers. An important platform for the development of didactic professional activities is also the yearly conference called Czech-Slovak Seminar and its published proceedings.

FORD 602 Languages and Literature

Linguistic and literary research activities are quite wide-ranging due to the number of language departments at the Faculty (focusing on Czech, English, German and Romance languages). It covers all DFORDs, i.e. 60201 (General language studies), 60202 (Specific languages), 60203 (Linguistics), 60204 (General literature studies), 60205 (Literary theory) and 60206 (Specific literatures). In many of the areas mentioned, results have been achieved that are, understandably, recognised at a transnational level.

Within linguistics, attention is paid to cognitive linguistics and its applications in education, to discourse analysis of social networks and electronic media, to communication skills, phraseology, synchronic toponomastics, and to the grammar of contemporary Czech and its developmental tendencies. In addition, creative activity is also directed towards selected topics of the phonetics and prosody of spoken English, and the analysis of the syntactic, lexical and textual patterns in English-language newspaper and academic articles. Important areas of research are also political discourse analysis, corpus linguistics, the computational and statistical analysis of language, and the linguistic analysis of foreign language acquisition. Topics of cognitive linguistics (issues of the so-called mental lexicon), intercultural communication, and knowledge transfer theory (especially knowledge transformation through linguistic communication) are also explored. Another important area is phonetics and phonology, especially in relation to articulatory phonetics, language interference and foreign language didactics. The pragmalinguistics of the Iberian Peninsula in comparison with the speech area of English, and the sociolinguistics of Spanish and languages in contact with Spanish are also areas of interest.

Of special importance is the study of minority languages, especially of those in Spain (A Fala, Catalan) and also in Latin America (Shuar). Studies to date include both grammatical and lexical descriptions of these languages, and their contact with the dominant languages of the area. In particular, description of A Fala has high international potential.

Within the framework of literary science, the Faculty's research activity focuses on the issues of older Czech literature, the literature of the Czech National revival, regional literature, Czech literature of the second half of the 20th century and contemporary Czech literature, literature for children and youth, narratology and general literary theory. Research interest is also concentrated on British, American, Irish and Canadian literatures (specific authors, for example, E. E. Cummings and Arthur Koestler, have been researched), significant international results have been achieved in this field.

Attention is also paid to a wide range of literary experimentation (literary montage, collage, issues of Modernism and the Avant-garde, intermedial overlaps), overlaps between literature and the natural sciences, or intercultural relations between Czech and German literature. Another important sphere is the overlap of literature with acoustics (so-called phonetic and phonic poetry, as well as experimental radio drama). Other topics of creative activity include literary translations and their theoretical reflections, and research on older Spanish literature.

Research on teaching methodology in the field of linguistics and literature is also important, i.e. DFORD 50301 (Education, general; including training, pedagogy, didactics). It focuses e.g. on the teaching of the

Czech language, of style and communication education, the methodology of teaching literature and reading in general, and on formative assessment. In the field of the methodology of teaching the English language, the differences in teaching different age groups (especially seniors and young children) and teaching students with specific needs (especially those with autism spectrum disorders) are studied. In connection with this, attention is also paid to the development of textbooks for teaching different language arts subjects. In the field of German, interest is directed towards the methodology of teaching phonetics and the problem of phonetic interference.

FORD 603 Philosophy, Ethics and Religion

The professional activity in this area extends to DFORD 60301 (Philosophy, History and Philosophy of science and technology), 60302 (Ethics, except ethics related to specific subfields) and 60304 (Religious studies).

Within philosophy, the themes of creative activity are the value transformations within contemporary thinking, their impact on education, and the transformations of contemporary philosophical thinking. Within ethics, a major activity is the aforementioned study of ethical decision-making issues in nanotechnology research and development (see [Social Sciences FORD 504](#)).

In the field of Religious Studies, the key interest is in the transformations of contemporary religiosity, in the context of Central and Eastern Europe, and in some specific phenomena such as contemporary non-religion. There is also intense research of the relationship between Europe and India from the colonial period to the present day, especially the influence of Western thought on our own understanding of the East and related new religious movements (see also [Social Sciences FORD 507](#)).

FORD 604 Arts (arts, history of arts, performing arts, music)

Professional art history activities fall under DFORD 60401 (Arts, Art History) and 60405 (Studies on Film, Radio and Television).

In the field of art history, the main focus is on the history of art in the region, with an emphasis on the early modern period (artistic patronage from the Baroque period to the 19th century) and the 20th and 21st centuries (where the main focus is on German-speaking artists from Bohemia, Moravia and Silesia). An important part of this are scientific research activities with overlaps into the field of cooperation with institutions creating a Memory of Nations collection in the wider region.

Significant research activity is reported in the field of film analysis (multiculturalism and minority production in Anglo-American film) and television series (visual style and narrative strategy of television detective stories). The activity in this field is transnational in nature and importance.

Experimental radio play and acoustic media, especially in the Czech-German context, play an important part. We have achieved significant international success and recognition in this field.

2.2 Artistic activity

The Faculty also develops its artistic activities, but these are not its pivotal area of focus. Production within the literary sphere has been quite rich, specifically original fiction (poetry, prose, opera libretto), often supplemented by authorial literary readings or literary workshops for the public. This artistic activity also extends into the field of radio art or so-called acoustic literature, where there is a certain connection between scientific and artistic activities. Output within literary production by the staff has been recognised and commended in the national (by the Czech national award *Magnesia Litera*) and in the international context (especially German-speaking countries).

Other activities include artistic translations, especially of older texts, in some cases those are turned into annotated translations accompanied by introductory studies (and thus they also fall into the field of academic activities). In the field of artistic translation, we have repeatedly achieved recognition in the national context.

Another important artistic activity at the Faculty is the production of composed programmes that combine a musical element with the spoken word (with a nationally and internationally recognisable outreach). These programmes are performed as part of large-scale concert performances by the Faculty choir.

To a lesser extent, we also carry out other artistic activities (drawing, painting, graphics with exhibitions in the Czech Republic and abroad, regional theatre activities, dramaturgy, etc.).

3. Strategic areas of creative activity

It is evident from the previous chapter that creative activity at the Faculty happens in a wide range of areas, which is primarily a consequence of the main mission of the Faculty, i.e. the education of future teachers. However, in order to fully provide for the teaching programmes, it is necessary to have experts in the various sub-disciplines of the given fields, including teaching methodology, at the various subject departments. This multidisciplinary nature sometimes makes it very difficult to build multi-member teams that focus only on one common research topic. In order to live up to its mission, the Faculty must demonstrate sufficient evidence of meeting the requirements for creative activity within the accreditation of study programmes in a wide range of disciplines and their specific sub-disciplines. It is not possible to support only selected areas of creative output in a targeted way, but it is necessary to **continue to develop it in the full breadth outlined in Chapter 2**, with possible minor fluctuations, since many special topics are covered by a small number of staff, often only by one person.

The explicitly formulated strategic outlook will thus be limited to only four vectors that are key for the development of the Faculty (either in the long term or presently). The areas of focus of these four vectors are not entirely independent. In fact, there is some overlap (more details follow below):

- **scientific research and creative activity in fields in which the Faculty has achieved excellent results** (these are often narrowly defined fields represented by a small group collaborating with other departments; however, the outputs from these fields are excellent in their own way and are applied, for example, in the first pillar of the M2017+ methodology);
- **professional (general and subject) didactic creative activity** (long-term and systematic development in the field of teaching methodology is absolutely crucial for the implementation of teacher education programmes);
- **scientific research and creative activities in the field of biology** (the need for development in this area is topical and in accordance with the opening of teacher programmes focused on natural history, biology);
- **scientific research activities in the areas in which the Faculty carries out doctoral programmes** (here the need for PhD programmes is a natural consequence).

Scientific research and creative activities in fields in which the Faculty has achieved excellent results

The fields in which we achieved a certain degree of excellence are often very narrowly defined (sub)fields, often represented by a small group collaborating with either Czech or foreign experts. These areas are identified mainly on the basis of scientific outputs, repeatedly successfully published in highly esteemed international journals and publishing houses, achieving good results in quality evaluation within the first pillar of the M2017+ methodology; or on the basis of the ability to obtain financial support e.g. within the framework of calls for grant applications of the Czech Science Foundation (GAČR). These areas are:

- numerical methods for solving integrodifferential and algebraic equations;
- research in robust statistical methods;
- optical measurement methods (collaboration with CERN);
- measurement methods for nanoparticles, ferroelectric and piezoelectric ceramics;
- research and development of nanomaterials (nanoparticles, nanolayers, nanofibres);
- applications, research and development of biomaterials (tissue carriers, etc.);
- studying the physical and geographic aspects of climate change and its local impact;
- highly specific research related to biology (e.g. grasslands, bryophytes);
- applications of geographic information systems;
- socio-geographical research on the cultural-historical understanding of borders (borders & migration);

- research on movement behaviour and physical fitness;
- the ethical aspects of nanotechnology;
- the transformation of contemporary religiosity and the influence of Western thought on our understanding of the East;
- the study of the challenges of modern society (local/global, women's & gender studies);
- research and work with overlaps of literature and other areas of art history (and other areas);
- the study of minority languages in Spain (especially A Fala);
- the study of contemporary history, especially of the regions of Central Europe;
- the modern history of the Liberec region;
- professional activities in art and art history (literature, art history, music theory). For a more detailed definition of each area, see Chapter 2.

Professional (general and subject) didactic creative activity

Given the nature of the most important aspect of the study programmes implemented at the Faculty, i.e. the preparation of teachers and other teaching professions, highly esteemed output within creative activities in pedagogy, psychology, and teaching methodology should be produced. For many different reasons, this is not yet the case. Thus support of pedagogically and teaching methods oriented research, not only at the general level, but also that of the teaching methods of individual subjects, is indeed one of the key tasks of Faculty development.

Given the demand for an increase in the number of students in technical fields, it is the intention of the Faculty to also obtain accreditation for a technical education programme. Since the Faculty is part of TUL, professional provision in various areas of technical sciences is covered, but it must be accompanied by the development of professional activities in the field of technical education methodology.

Scientific research and creative activities in the field of biology

The Faculty has relatively recently accredited a study programme focused on science teaching (for primary school teachers). The interest of students in this field is considerable. The Faculty is also trying to get accreditation for biology teaching (for secondary school teachers) and to build a full- fledged biology department (so far there is a sub-department within the chemistry department). This brings the need to recruit experts in a number of sub-disciplines related to biology. In order to fully realise their potential, however, it is advisable to run a parallel, non-teaching, specialist programme as well. It is therefore the Faculty's intention to obtain accreditation for the Nature and Environmental Conservation programme. In order to meet the abovementioned objectives, it is thus necessary to support scientific research and creative activities in relevant areas of biology, including the methodology of teaching biology.

Scientific research activities in the areas in which the faculty implements doctoral programmes

For the development of the Faculty, an emphasis on obtaining accreditation for doctoral study programmes is necessary. Given their character, these programmes are naturally directed towards scientific research activities and professional collaboration between academic staff and doctoral students. Larger research teams can thus be created. The Faculty will therefore support those fields in which this intention can be fulfilled, i.e. applied mathematics, selected areas of physics, chemistry, biology for the Nano and Microtechnology programme, selected areas of history, sociology and religious studies for the History and Society in Modern Times programme, and ecology.

4. Related documents, provision and implementation of the Strategy

The strategy for creative activities of the FED TUL, presented in this document, refines and develops the Strategic Plan of Educational and Creative Activities (hereinafter referred to as the "Strategic Plan") of the FED for the years 2021-2030. This plan is based on the Strategic Plan of the Ministry of Education and Science for the field of higher education for the period from 2021, and is in line with the Strategic Plan of Educational and Creative Activities and the Internationalization Strategy of TUL for the period 2021-2025, with a view to 2030. Another source upon which it is based is the Strategy for the Czech Republic's Education Policy 2030+ ("Strategy 2030+").

The creative activity of the FED will be influenced and shaped by the current M2017+ Evaluation Methodology, especially with regard to improving the quality of results leading to the evaluation of the FED or TUL for the next period of assessment.

To ensure implementation of the Strategy, we expect to use the following financial resources in particular:

- contribution and subsidies from the state budget;
- operational programmes;
- GAČR and TAČR projects, projects announced by ministries of the Czech Republic and other project sources;
- foreign programmes and other programmes and funds.

The present document presents the status and outlook on the direction of the Faculty in 2022. As stated in the previous sections, creative activity at the Faculty takes place in a wide range of areas. In order to live up to its mission, the Faculty cannot only target support to selected areas of creative activity, but must continue to develop it in its full breadth. The FED, however, is certainly not able to achieve excellence in all of its scientific and research activities, so it is necessary to consider the level of support for individual areas. The strategic directions necessary for the development of the Faculty are set out in Chapter 3. The Faculty will also systematically support such research topics more strongly that have the greatest international impact and excellence in the context of the M2017+ methodology and topics playing a key role in the development of regional values.

The current relevant international context is commented on for the research topics in Chapter 2. From the Faculty's perspective, these excellent R&D areas will be reviewed at regular biennial intervals to identify new R&D topics with high potential impact not only on the scientific community but also on society as a whole.

In line with its strong focus on teacher education, the Faculty will strengthen its staff capacity in the area of educational research with a simultaneous emphasis on the development of subject-specific teaching methodology.

In accordance with the university strategy, the FED will actively support the entry of TUL inter-faculty scientific teams into scientific projects of large international consortia. The Faculty will also expand international cooperation through conferences, exhibitions and other events.

5. Editorial staff

doc. Ing. Martin Plešinger, Ph.D., Vice Dean for Science, Research and Doctoral Studies

prof. RNDr. Jan Pícek, CSc., Dean

doc. PaedDr. Aleš Suchomel, Ph.D., Vice-Dean for Development and Academic Affairs

Heads of the individual departments of the Faculty of Education